V. Descriptions of some new Papilionidæ. By J. O. WESTWOOD, M.A., F.L.S., Pres. Ent. Soc.

[Read 3rd July and 4th December, 1871.]

THE vast additions which have, within the last twenty years, been made to our Entomological Collections from almost all parts of the world, and the more careful indication of the localities of individuals from adjoining districts, have not only resulted in the description of great numbers of distinct species, but have also made us acquainted with numbers of locally distinct races, or geographical varieties, or sub-species, as they have been variously termed, the study of which, especially as regards the manner in which the variation in the different individuals or races may have been effected, if at all, and especially what may be the value of the characters which are thus seen to vary, is still quite in its infancy.

In the Paper which I now present to the Society, I have described several Butterflies belonging to the great genus Papilio, some of which seem quite distinct from all the already described species; whilst others may possibly be regarded as permanent local varieties. the latter, in the present state of the science of Entomology, it will, I think, be desirable to assign names, but, in accordance with a plan, which I have elsewhere adopted, I have given them names which at once indicate their apparent connexion with the species to which, in a wide sense, they appear to belong. I have also taken some pains to indicate the manner in which the variations in the different species occurs. The older writers, of course, did not hesitate to consider the sub-species as identical with the type; hence we find Fabricius writing the MS. name of " Pavilio Idea, var. β " as the identification of a drawing of Hestia Leuconoe, of Erichson, in the volume of Jones's 'Icones' containing the Papiliones Danai, three-quarters of a century before it was described by Erichson; and many other instances might be quoted, in which both Linnæus and Fabricius described, under the same name, individuals now regarded even as more distinct than geographical sub-species or varieties.

The careful investigation, indeed, in all its bearings, of these wild local varieties (assuming them to be such) seems to me to be likely to afford more important data

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in the solution of the question of the evolution of natural objects, than whole volumes of details of experiments made upon domesticated, or semi-domesticated animals, which appear, from their very nature and position in the general scheme of the economy of the Creation, to have been endowed with a great degree of plasticity, to fit them for the changes of existence to which man would subject them.

If we look at most of the insects described below, and indeed at many of those which have lately been described by our leading Lepidopterists, we find these local varieties distinguished by some modification in the size or position of the markings of the wings; or, very rarely indeed, by some actual variation in form. If, indeed, we possessed a knowledge of their transformations, we might be better able to judge of the proper weight to be accorded to such variations; but it is hard to understand how the fact of a butterfly transferring its location a certain number of miles, should be attended with an alteration in its markings which can in no wise affect its means of living.* It is not difficult to suppose that a change of locality, attended possibly with a supply of food of a more or less nourishing quality, might effect an alteration in the size of the specimen, but that it should result in a few, more or less, of the scales in the wings being differently sculptured, thereby producing a corresponding difference of colour, is not so intelligible; experiments as to the capability of these local varieties breeding together would be very decisive, but in the present state of science, it seems quite impossible to determine the limits of these varying species, and we, consequently, have the same author in one place regarding each subspecies as distinct, and in other cases giving them under one specific name; thus, in the last Catalogue of the 'Diurnal Lepidoptera,' recently published, Mr. Kirby gives all the sub-species of the Priamus group as varieties of Orn. Priamus, whilst those of the Paris and Helena groups are treated as distinct species.

Papilio Buddha, nov. sp. Pl. III. fig. 1.

P. alis nigris basi viridi-atomosis, fascia lata communi cærulea vel aureo-viridi (secundum situm) ad costam pos-

^{*} These observations were written some months before the appearance of Mr. W. H. Edwards's memoir on *Papilio Ajax*, in which two supposed sub-species have been satisfactorily shown to be seasonal variations, such as are well known to occur in some of our English moths.

ticarum haud extensa, posticis macula lunata in angulo externo costæ lunulaque parva ad angulum analem luteis, lunulis 4 subapicalibus, fere indistinctis, viridi-atomosis.

Expans. alar. unc. $3\frac{3}{4}$.

Hab.—___? In Muss. Hewitson et Druce.

This fine insect belongs to the Palinurus group, and is closely allied to P. Brama and Dædalus, but is distinguished by its larger size, and by the great extent of the fascia in the hind-wings; in the fore-wings this gradually widens from the costa to the inner margin, where it is half an inch in breadth; its margin towards the base of the wing is nearly straight, but on the side next the apical margin it is more scalloped between the veins; it extends exactly to the extremity of the discoidal cell between the two discocellular veins, but beyond the cell between the upper of these veins and the fore-margin; in the hind-wings, it forms a large oval patch, occupying the whole central disc of the wing, gradually shaded off behind, and not reaching to the costa, but extends upwards along the anal margin, and covers portion of the discoidal cell; the basal portion of all the wings is thickly powdered with golden green scales, the apical portion of the fore-wings being much more strongly irrorated with them; near the outer angle of the hindwings, is a fulvous broadly lunate spot, and a smaller and narrower one near the anal angle; the tail is not powdered with scales; between the large discoidal spot, and the hinder margin of the hind-wings, is a series of four very obscure lunules formed of a few green scales, and there are a few fulvous scales in the space next the outer angle. The wings below are brown, the whole of the dark portion which extends to beyond the middle of the wings being thickly irrorated with luteous scales, which are thickest on the inner portion of the basal part of the fore-wings, and the basal portion of the hind-wings (extending to about the extremity of the abdomen) in which parts the ground-colour is paler brown; a very pale buff-brown fascia on the fore-wings commences at a greater distance from the end of the discoidal cell than the extremity of the blue-green fascia reaches on the upper side of the fore-wings, and is traversed by the black veins and the brown intermediate longitudinal The apical margin is brown, gradually narrowing folds. from the apex to the inner angle of the fore-wings. On

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the hind-wings the bar beyond the dark portion is of a more fleshy-brown colour, the apical margin darker, and with a row of black, fulvous, and silvery lunules, of which the interior forms a bilunate occllus at the anal angle.

Of the species with a green fascia across all the wings, of which *Papilio Crino* may be considered as the type, we find that species and *P. Blumei* distinguished by having the tails of the hind-wings more or less irrorated with metallic blue or green scales, the band in *P. Crino* running across the wings entirely beyond the discoidal cell, whilst in *P. Blumei* it is so much advanced towards the base, that it does not at all, in the fore-wings, and only slightly in the hind-wings, extend beyond the cell.

As regards the nomenclature and specific identification of the two Fabrician species with a green fascia across all the wings, but having no spots on the tails, we fortunately possess satisfactory materials in this country.

Papilio Crino, Fabr.

This was described by Fabricius from the collection of Drury, with an erroneous locality, Africa, but with a reference to Jones's 'Icones,' V. I. pl. 53. Donovan, who figures the species in his 'insects of China,' states that he does so on the authority of Drury's collection, and Boisduval states that he received it from Cochin China. Jones's drawings do not give any locality, but the fascia not extending either in fore or hind-wings into the discoidal cells, and the green spot close to the tip of the tails of the hind-wings, at once separate this species from all it allies. There are two males of P. *Crino* in the British Museum, in which there is a very small patch of green scales at the lower extremity of the discoidal cell of the fore-wings. These are wanting in the specimen in the Hopeian collection, and in others which I have seen, especially in specimens in the collection of the Rev. E. Savory, from Ceylon, some of which, males, have the first and second branches of the median vein clothed with a narrow stripe of brown hairs (more slender on the second branch), whilst these branches are quite naked in other male specimens. According to Dr. Felder (Catal. Pap. pp. 34, 82), these naked individuals are from the mountainous part of Ceylon, and he has accordingly applied to them the specific name of P. montanus, adding that the mountain individuals have the fascia in the hind-wings, especially of the females, broader and more brightly coloured than the littoral specimens.

Papilionida.

Papilio Palinurus, Fabr.

P. Palinurus was described by Fabricius (Mantissa, p. 2) from the collection of Lund, as a native of Tranquebar. Fortunately, Sir Joseph Banks also possessed the same species from Tranquebar, and in Mr. Jones's drawings it is represented from the Banksian specimen from that country, which is still preserved in the British Museum. The fascia of the fore-wings is rather narrow, and of nearly equal width, where it crosses the branches of the median vein; it is narrowed where it crosses the end of the discoidal cell, extending a short distance beyond it; the fascia of the hind-wings is transverse, narrowly ovate, reaching close to the anal margin of the wing, and resting on the top of the anal ocellus.

In the 'Revue Zoologique' for 1840, M. Guérin-Méneville separated, under the name of *P. Brama*, the specimens from the "côte malaye," having the "bande des ailes supérieures large, passant sur l'extrémité de la cellule discoidale et étant coupée en deux parties égales par cette extrémité," whilst he retains the specific name of *P. Palinurus* for those which have the "bande tres large, passant en delans de l'extrémité de la cellule discoidale et touchant seulement cette extrémité," and which have a broad central dark fascia, nearly destitute of pale scales in the hind-wings beneath.

In the figures of the two sexes of *P. Brama*, the male is represented with a much broader fascia in the fore-wings, whilst in the hind-wings it is broadly ovate, extending considerably within the discoidal cell, which is not the case with the figure of the female.

In Mr. Hewitson's collection are three apparently distinct forms of these insects :—

1. The fascia on the fore-wings has the posterior half of nearly equal breadth, and it is here extended so much towards the hinder angle of the wings, that its inner margin, when it touches the posterior edge of the wing, is nearly ten lines distant from the body, and on the hind-wings the fascia is very transverse and narrowed, conical in its form, not quite extending to the anal margin considerably above the occllus at the anal angle. This appears to me to represent the typical P. Palinaras, and such specimens of P. Brama, of Gućrin-Méneville (pl. I. f. 4) as he considered to be the females.

2. With the fascia on the fore-wings gradually widening to the hind-margin; it is more oblique, so that its inner edge, where it joins the posterior margin of the wing, is not more than half-an-inch from the thorax. In the hind-wings the fascia is very broad and ovate, extending to, and along, the anal margin, from opposite the extremity of the abdomen nearly to the fulvous lunule of the ocellus at the anal angle. There is a brilliant coloured specimen of this variety from South India, in the British Museum. This, according to M. Guérin's views, ought to be considered as the male of P. Palinurus (Brama, Guér.). I have not had an opportunity of carefully examining the sexual organs of these butterflies, and if it should be ascertained that the specimens with the broad fascia of the hind-wings are not exclusively of one sex, it will be necessary to give a distinct name to this No. 2.

3. (P. Dædalus.) The fascia of the fore-wings is here also gradually widened to the hind-margin, and is more transverse, its inner edge, where it reaches the posterior margin of the wing, being nearly three-fourths of an inch distant from the body, and the fascia in the hindwing is more oblique, conical in form, and extending at its extremity next the body, only to the inner upper angle of the anal ocellus. This agrees with Guérin's figure (pl. I. fig. 2), of P. Palinurus.

It appears to me evident from these descriptions, that M. Guérin-Méneville has misapplied these specific names; that his P. Brama is identical with the P. Palinurus of De Haan (pl. 7, f. 3) and with P. Regulus of Stoll.; whilst his P. Palinurus, with the green bar not extending beyond the cell of the fore-wings, and with the dark fascia on the underside of the hind-wings, is identical with P. Dædalus, of Felder.

Papilio noctula, nov. sp. Pl. IV. fig. 3.

P. alis maris nigro-cyaneis, posticis et dimidio postico anticarum purpureo-nitidis; anticis latis, posticis parvis, mediocriter sinuatis; palpis, collo et thoracis lateribus, subtus rufo-notatis.

Expans. alar. antic maris unc. $4\frac{1}{2}$.

Habitat in Borneo. Mas in Muss. Oxon., Hewitson, Druce.

This species belongs to the group of which P. Nox is the type, and I should probably not have erred in uniting as sexes of the same species, the male insects above described under the name of P. Noctula from Borneo, remarkable for the large size of the forewings, glossed with rich raven-purple on the upper side; and the fine female specimens described below, under the name of P. Stria, also from Borneo, in the collection of Mr. Hewitson.

As, however, we possess no certain information as to the specific identity of these two insects, and as it may prove, ultimately, that *P. Noctula* may be the male form of *P. Erebus* of Wallace, also from Borneo and Malacca, the hind-wings of the temales of which are glossed with steelblue, of which there is no trace in *P. Strix*, I have thought it best, provisionally, to describe the two sexes as distinct. If *P. Strix* should ultimately be found to be the genuine partner of *P. Noctula*, the latter name, in accordance with the established usage for retaining the name given to the males must be employed, and that of *P. Strix* abandoned.

For the purpose of comparison with the only known males of this group hitherto described, namely, that of P. Noctis, of Hewitson, also published as such from Borneo, by Mr. Wallace, in the Trans. Linn. Soc. (XXV. Pl. V. f. 1), I have given a careful outline of the typical specimen of this male now in Mr. Hewitson's collection on pl. IV. fig. 2, from which it will be at once seen that, although having much more rounded and broader forewings than the male of P. Nox (of which a figure is now, for the first time, represented on pl. IV. fig. 1, also from the collection of Mr. Hewitson, from Java, formerly in coll. Wallace, and in the British Museum, from Pulo Penang). The male of P. Noctula has still larger and broader fore-wings, whilst the hind-wings are more slightly sinuated on the hind-margin than in P. Nox, male, but more decidedly so than in P. Noctis, male.

The three males are also well distinguished by the colour of their wings, that of *P. Now* being black with a slight brownish tinge, the apex of the fore-wing beyond the cell, extending about half-way along the apical margin being paler, and gradually faded off to black-brown, with black veins, and slender black lines between the veins. The male of *P. Noctis* is more glossy black, with the apical portion of the fore-wings scarcely lighter than the basal portion : whilst the male of *P. Noctula*, in addition to the raven-purple colour of the upper side of the wings, has the two discoidal veins and the two terminal branches of the post-costal vein of the fore-wings slightly marked on each side with a few luteous scales on the upper side, whilst on the under side (which wants the purple gloss), the six terminal longitudinal veins of the fore-wings are more distinctly margined with luteous lines; the hind-wings are small.

The male of P. Nox is further distinguished by having the front of the head and palpi clothed with pinkish-red scales, as well as the posterior orbit of the eyes; there is also a spot of the same colour in front of the fore-wings, and one beneath the base of each wing; the anal valves are also partially clothed with pinkish-red scales.

The male of *P*. Noctis has the face and anal valves blackish-brown, and destitute of the red scales, whilst the male of *P*. Noctula has the lower part of the face slightly, and the whole of the palpi, as well as the sides of the collar and thorax, close to and beneath the base of the wings, red.

Papilio Strix, nov. sp. Pl. IV. fig. 4.

P. alis fœminæ magnis, late ovatis, nigris; omnibus longitudinaliter luteo-striatis; posticis mediocriter sinuatis corpore nigro, facie, palpis, lateribus colli thoracisque subtus alarum basin, anoque, rufo-notatis.

Expans. alar. unc. $5\frac{1}{2}$.

Hab.-Borneo. In Mus. Hewitson.

The female specimens (Pl. IV. fig. 4) in the collection of Mr. Hewitson, which, from the identity of their locality, I have considered may possibly be the true partners of the males described above as *P. Noctula*, have very large oval fore-wings, resembling those of *P. Nox*, whilst the hind-wings are also comparatively of large size, but less strongly sinuated than in *P. Nox*, thus resembling *P. Erebus*, Wallace, Linn. Trans. XXV. p. 41 (from Malacca = *P. Nox*, var. De Haan, Verh. t. 5, f. 3, 3), from Banjermassing, Borneo. In the fore-wings, the portion of the post-costal vein, between the origin of its second and third branches, is of nearly equal length, with the spaces between the third and fourth branches; the third branch arises at a small distance beyond the cell, and the terminal portion of the post-costal vein, beyond the insertion of the fourth branch, is three times the length of the space between the origin of the third and fourth branches: whereas, in *P. Nox* and *P. Erebus*, the space between the third and fourth branches, is much elongated, and occupies nearly two-fifths of the length of the post-costal vein between the end of the cell and the tip of the wing, and the space between the second and third branches is only two-thirds of the length of that between the third and fourth branches.

The wings, both above and below, are black, strongly marked with longitudinal cream-coloured stripes on either side of the longitudinal black veins, the discoidal cell is also marked with a number of similar lines less decidedly. The hind-wings are also similarly marked on each side of the longitudinal veins, the incisures of the hind-wings are not so deep as in *P. Nox*, the four central ones being marked by small triangular cream-coloured spots, the face, sides of the thorax, and extremity of the body are clothed with scarlet scales.

The female of *P. Nox* (*P. Memercus*, Godart) is brown above, with the apical half of the fore-wings strongly marked with brownish-white scales on each side of the veins, the hind-wings being uniformly brown on both sides.

The female of P. Erebus is black above; the veins, especially at the apex of the fore-wings, margined with white scales, becoming gradually more sooty towards the inner angle, and the under wings are raven-black, each of the spaces between the veins, beyond the cell, bearing a large triangular jet black spot.

The female of P. Noctis, Hewitson, Proc. Zool. Soc. 1859 (p. 423, pl. LXVI. f. 5, 6), is described thus:— "upper side dark brown; all the nervures, except those which enclose the cell, margined with lighter colour, with white near the apex of the anterior wing and the outer margin of the posterior wing; posterior wing with a band of dirty white near the outer margin; outer margin of both wings light yellow. Underside as above, except that the margins of the nervures of the anterior wing are whiter, and that the outer margin of the posterior wing is broadly cream-colour, marked with a double row of black spots."

"Expans. $4\frac{9}{10}$ inch." "Hab.—Borneo."

Papilio Papone, nov. sp. Pl. III. fig. 2.

P. alis anticis elongato-triangularibus, posticis brevioribus, subtriangularibus, sinuatis; omnibus supra cyaneonigris; posticis pone medium maculis 5 elongato-trigonis, postice bifidis, serieque macularum 7 subapicalium, intermediis lunatis, albidis, harum interna fulva, incisuris tenuiter albidis, interna etiam fulva; alis subtus rufofuscis, posticis ut supra maculatis, incisuris late fulvis.

Expans. alar. antic. unc. $4\frac{1}{2}$.

Habitat in India orientali D. Pratt. In Mus. Hopeiano Oxoniæ (olim nostr.).

This species is closely allied to P. Panope, in the style of the markings of the hind-wings; but, on the upper side, all the wings are of a rich blue-black, the anterior being entirely immaculate,* and elongate triangular, whilst the hind-wings are subtriangular, the apical margin appearing as though truncate instead of being rounded as in P. Panope. The sinuations of the hind-wings are of moderate depth, with whitish incisures; these wings are marked beyond the middle with a row of five large spear-shaped marks, followed by a row of lunules, of which the inner one is fulvous, and the four others cream coloured, followed towards the outer angle by two oval spots of the same colour; the marginal incisures are very slenderly buff coloured, those nearest the anal angle being orange; the head and anterior part of the thorax are spotted with white as in P. Panope, and the abdominal segments are marked with slender white lines at the sides.

The underside of all the wings is a rich red-brown, with a slight purple tinge seen in certain lights; the fore-wings are immaculate, except a few white scales at the base, of which there are also two patches at the base

^{*} With a lens, a very few luteous scales can be perceived in those parts of the fore-wings near the apical margin, where the cream-coloured row of spots are developed in *P. Panope*.

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of the hind-wings; the latter are marked beneath as above, except that the marginal row of incisures is broad and fulvous, so that each incisure is separated from the white submarginal lunule by a slender black lunule; the spots at the anal angle are united into a fulvous oval spot, with a black rounded spot in its middle; the underside of the thorax is considerably spotted with white, and the abdomen has a row of white spots on each side and down the centre.

Papilio Ramaceus, nov. sp. Pl. V. fig. 3.

P. alis rufo-fuscis, anticis magnis; serie submarginali macularum parvarum albidarum; posticis serie macularum cuneiformum pone cellulam cum serie submarginali lunularum albidarum absque incisuris, albis.

Expans. alar. antic. unc. $3\frac{3}{4}$.

Habitat in Borneo (D. Lowe). In Muss. Oxon., Hewitson, Druce.

This species (of which I have seen several perfectly similar specimens) has the fore-wings of a comparitively much larger and broader form than P. Macareus, to which it is nearly related. The upper side of the wings is of a rich red-brown colour, with a silky gloss; the anterior pair are immaculate, except a submarginal row of small cream coloured spots near the apical margin ; the spots next the inner angle being preceded occasionally, as in the specimen figured, by two other still smaller ones; the hindwings have a row of arrow-head shaped spots, varying somewhat in size, beyond the middle of the wing, preceded by an indistinct spot at the extremity of the discoidal cell, and followed by a submarginal row of whitish lunules extending to the anal angle. On the underside the wings are similarly marked, but the ground-colour of all the wings is very pale brown, and the spots at the inner angle of the fore-wings are extended to the margin; the hind-wings are marked, on the hinder margin, with six very small and narrow white incisures; the body above is black, marked with white dots on the head, and neck, and the sides of the abdomen have a slender white line on each side beneath; the sides of the thorax on the upperside, are destitute of the whitish gray hairs which are so distinct in P. Macareus.

The relationship of this form with *P*. *Macareus*, is indicated by its name being an anagram of the name of that species.

Papilio Odenatus,* nov. sub-sp. Pl. III. figs. 3, 4.

P. alis anticis brevioribus, posticis ecaudatis, sinuatis, fusco-nigricantibus, fascia maculari communi, albida, in alis anticis fere ad apicem extensa, in posticis subangusta; subtus fusca, fascia ut supra, at in anticis abbreviata, macula alba ad apicem cellulæ discoidalis alteraque ovata subapicali; posticis basi fulvis, nigro-striatis, maculisque duabus subcostalibus nigris, pone fasciam nigro striatis, sinubus marginalibus vix albo-notatis.

Expans. alar. antic. unc. 4.

Hab.—Old Calabar, Muss. Hopeiano Oxoniæ; Ashantee in Mus. Brit.

This species is intermediate between the *P. Zenobia*, of Fabricius, as figured by Donovan (*P. Cypreofila*, of Butler), and *P. Messalina*, Stoll., agreeing with the former in the narrowness and more decidedly marked central fascia of the hind-wings, but differing from it in the almost total obliteration of the white edges to the marginal incisures of the wings, in which latter respect, as well as in the broken, macular fascia of the fore-wings beneath, it more nearly agrees with *Messalina*, from which, however, it differs in the narrow fascia of the hind-wings.

The fore-wings are black-brown, with very minute white incisures, and the hind-wings are similarly coloured, with the incisures distinct, but narrowly white; all the wings are traversed by a cream-coloured fascia, which is macular in the fore-wings, running from rather beyond the middle of the hinder margin towards the apex, and not recurved towards the costa, as in P. Cypreofila; it consists, in the fore-wings, of eight spots, of which the first nearest the apex of the wings is of moderate size, elongate-oval, and bifid at its apex, and placed about half-way between the cell and the apex; the second is much smaller elongate-triangular; the third, fourth, fifth, and sixth are of nearly equal size, each rounded within and pointed without; the seventh is the largest, and divided in two by the false fold, and the eighth is narrow, and rests on the hinder margin; the fascia in the hindwings is entire, running entirely across the wing, half

* I have named this species after the husband of Zenobia.

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of the fascia being within, and half beyond the discoidal cell; the inner margin of this fascia is straight, but the outer is acutely dentate, the black part of the wing running upwards very slightly along the veins, whilst the middle of each of the dark spaces intervening between the veins is acutely extended much further upwards or backwards with a sharp defined margin. There are a few scattered whitish scales visible at the extremity of the cell of the fore-wings; on the underside, the second smaller triangular spot of the fascia of the fore-wings is obsolete, and there is a more decided white spot at the extremity of the cell; the base of the hind-wings is dark orangebuff, with black stripes between the veins, there being three within the discoidal cell, of which the middle one is abbreviated; the black mark between the costal and post-costal vein is much the thickest, divided near its base obliquely into two parts; the cream-white fascia of the hind-wings is rather narrower than above, and there is tendency to develop a spot beyond the fascia in the area between the second post-costal branch and the discoidal vein; the spaces between the veins, beyond the fascia, are much more strongly marked with a black longitudinal stripe than on the upper side.

I have named this species, which extends from Old Calabar to Ashanti, after the husband of Zenobia, to express its close affinity with the *Papilio* so named.

PAPILIO ZENOBIA.

The insect described by Fabricius, in all his works, under the name of *P. Zenobia*, was stated by him to have been a native of Sierra Leone, and to have been in the collection of Sir J. Banks. In his last work (Ent. Syst. iii. p. 37, repeated on p. 115) he referred the species to Jones, fig. pict. 1, tab. 68. On this drawing, however, Jones refers to the collection of Drury, and not to that of Banks. Donovan (Nat. Repos. 5, pl. 179) figures the same insect as Jones, stating that this is a "splendid *Papilio* represented in the drawings of Mr. Jones, as referred to by Fabricius. Our figure is, however, from the specimen itself, in the cabinet of Sir J. Banks, Bart., and was copied during the life-time, and by the express permission of its very worthy possessor." On comparing Donovan's and Jones' figures, however, it

is evident that the former is a bad copy of the latter: they both represent the butterfly as measuring about five inches in expanse (nearly an inch wider than the natural size), but Donovan incorrectly represents the fascia of the fore-wings as extending quite to the costal margin, as well as having the anterior spots of the fascia much too elongated, especially that between the two terminal branches of the post-costal vein, which is represented as extending backwards to the cell itself; he has also drawn the small white marginal incisures of the fore-wings at equal intervals apart, whereas, two of them are wanting near the apex of the wing. Mr. Butler (Cat. Lep. D. Fabr. p. 252) states, however, that the type specimen of P. Zenobia is in the Banksian collection, and is quite distinct from Donovan's species, the latter being P. Oypreofila (Butler, Ent. Month. Mag. V. p. 60). If this be the case, we must admit that Fabricius incorrectly referred his species to Jones's 'Icones,' and that Donovan's assertion of his drawing having been made from the Banksian type was false. We are thus reduced to the Fabrician description; and I think we must allow that the words "maculis marginalibus albis" can only be intended for the insect figured by Donovan and Jones; the "fascia interrupta nec marginem attingit" in the fore-wings, although not inapplicable to the insect figured by Donovan, would agree better with Stoll's figure of Messalina, (pl. xxvi. f. 2), which Mr. Butler regards as the true P. Zenobia, agreeing with the insect in the Banksian cabinet; whilst the words "subtus concolores at posticæ basi flavæ nervis striisque atris " agree better with the insect figured by Jones and Donovan, than with Stoll's P. Messalina, or even P. Odenatus, in which the black mark towards the costa of the base of the hind-wings is divided into two thick spots, which Fabricius would hardly have called a stria; in fact, the description which he has given of his next species, P. Cynorta, which has the hind-wings, beneath, marked as in Stoll's Messalina, shows how completely he appreciated this character, "affinis omnino præcedenti (Zenobia) paullo minor et maculæ marginales albæ desunt at basis flava, alæ posticæ punctis tribus distinctis nigris ;" " posticis basi flavis nigro punctatis striatisque." Under these circumstances, I am induced to retain the name of P. Zenobia for the insect figured by Donovan, and to apply that of P. Messalina to Stoll's insect, which Mr. Butler regards as the true Zenobia.

Papilio Parsedon, nov. sp. Pl. V. figs. 1, 2.

P. alis nigro-fuscis, fascia communi albida, ad marginem internum anticarum sensim et ad costam posticarum valde, dilatata, punctis tribus parvis rotundatis subapicalibus in anticis et serie lunularum 5 ante marginem posticam in posticis ejusdem coloris; alis posticis subcaudatis subtus litura basali et 5 lituris pone fasciam rubris, angulo anali absque ocello.

Expans. alar. antic. unc. $2\frac{1}{4}$.

Habitat ——? In Mus. Druce (E Mus. Kaden absque patriæ indicatione).

The unique specimen of this sub-species is unfortunately without any indication of its locality. It is evidently a localized form of P. Sarpedon, remarkable for its small size, the more pointed tail, and the remarkable width of the pale fascia (common to both wings) where the anterior and posterior wings come in contact; the specimen is a male, with very long white hairs along the anal margin of the hind-wings. The specimen is quite fresh, and there seems no reason to suppose that the fasciæ and marks on the wings were ever of a green colour, or in fact, different from their present pale straw colour, very slightly tinged in certain points of view with green. The veins in the broad part of the fascia, in both wings, are very pale straw colour. There is a very small concolorous spot on the inner margin of the hind-wing's, near the extremity of the fascia; the pale lunules near the outer margin of the hind-wings are small and narrow, especially the three outer ones. The markings on the underside of the wings are the same as above, except that the submarginal lunules of the hind-wings are suffused with brown scales, and are preceded by a series of five narrow red marks, the innermost of which is in contact with the extremity of the inner margin of the fascia of the hindwings. In both fore-wings, the membrane between the base of the second and third branches of the median vein, is marked with a dark curved line, inclosing a somewhat triangular space.

The relationship of this form to *P. Sarpedon* is indicated by its name being an anagram of that name.

The nearest approach to this form is made by certain New Holland individuals of *P. Sarpedon*, one of which I figured in the coloured plate of butterflies, in 'Partington's Cyclopædia of Natural History,' in which the green band is much dilated in the middle. In the Oxford Museum there are the following localized forms of Sarpedon.

From Assam. Hind-wings with the tooth at the extremity of the third branch of the median vein not extending beyond that of the second branch; green fascia on fore-wings, moderately divided by black veins; lunules of hind-wings narrow. Specimens from China nearly agree with the preceding, but the fascia in the fore-wings is somewhat more macular, and in the hindwings scarcely extending beyond the discoidal cell towards the anal margin.

From Cuna (East Indies). Similar to the Assam specimens, but the hind-wings much more elongated, the third branch of the median vein produced into a long tooth, the part of the median vein crossing the green bar of the hind-wings thick and black. Specimens from Aru are nearly similar.

From New Holland. With the green fascia gradually becoming very broad at the inner margin of the forewings, and the costal margin of the hind-wings.

From Celebes (*P. Miletus*, Wallace, Linn. Trans. XXV. p. 65, pl. vii. f. 2; *P. Milon*, Felder). Fore-wings much elongated, and acute at the tips, with the costal margin more arched; the green fascia in these wings of a bluer colour, very narrow, and separated by the black veins into distinct spots; hind-wings with the tail scarcely produced, with the green submarginal lunules of large size, and strongly angulated in the middle.

From Ceram (in Mus. Hewitson). Differs from the Celebes type in the fore-wings being of the ordinary form, with the green band wider, traversed only by the black veins (as in the Continental types), and the hindwings formed as in the Celebes type (both in shape and in the extent of the tail), with the green band broader in the discoidal cell, the four green submarginal lunules very strongly marked, and with a clear slender acute lunule between the innermost lunule and the anal angle.

Papilio Burchellanus, nov. sp. Pl. III. fig. 5.

P. alis anticis magnis, latis et ovalibus ; posticis mediocribus, sinuatis: omnibus fuscis, posticis dimidio apicali nigricanti, incisuris albis, serie macularum 6 punicearum parvarum, interna duplicata, ante marginem apicalem posita; collari rufo-binotato, lateribusque thoracis sub basin alarum rufo-maculatis.

Expans. alar. unc. 4 lin. 1.

Habitat in Brasilia, taken at Tenénte, near Fárinhapódre (D. Burchell). In Mus. Oxoniæ.

This species is nearest allied to the Brazilian P. *Pompeius, Proteus*, and especially to *Panthonus*, φ , from which it differs in the very large size of the fore-wings, which imparts to it a certain degree of resemblance to some of the broad-winged species of Euplæa.

The unique specimen collected by Dr. Burchell appears to be a female, and in both of the hind-wings the extremity of the second branch of the median vein is mutilated, so that it might possibly be inferred that the species was a tailed one, but for the circumstance that, in the Papilionidæ, it is the third branch of the median vein which is extended into the tail. The discoidal cell of the hind-wing terminates in an acute angle; the third branch of the median vein arising at the apex of the angle, the space between the second and third branches of the median vein being almost precisely of equal length with the lower disco-cellular.

The last-mentioned character, together with the large immaculate fore-wings, will distinguish this insect from the great mass of black South American Papilios with red spots on the hind-wings.

Papilio Chiansiades, nov. sp. Pl. V. figs. 4, 5.

P. alis supra nigricantibus incisuris albis; anticis macula magna albida in medio marginis interni; posticis maculis tribus sanguineis prope angulum ani, anali late, proxima anguste bipartita, 3tia rotundata; posticis subtus serie 7 macularum rubrarum submarginalium, majoribus tribus internis albo supra irroratis, duabusque internis maculis duabus rubris supra adjunctis; thorace infra fulvorufo-maculato (\mathcal{J}).

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I

Expans. alar. antic. unc. 41.

Habitat Rio Topo, Ecuador (Buckley). In Muss. Druce et Hewitson.

The fore-wings are elongate-triangular, with the apical margin slightly emarginate, the incisures towards the inner angle narrowly white. They are of a black-brown colour, with a large, nearly semicircular, patch of luteous white in the middle of the hinder margin, extending nearly to the first branch of the median vein. The hind-wings are deeply incised along the outer margin, the middle point being somewhat the most prominent; the incisures white; there is a large transverse, oval, blood-red patch, irrorated with black scales, extending inward from the anal angle, composed of three patches separated by the veins, the one at the anal angle being widely divided into two portions, and the next also divided by a thinner transverse dark line into two portions, whilst the innermost spot is roundly oval and entire.

On the underside, the spot on the inner margin of the fore-wings is smaller than above, and the red spots of the upper side reappear, the larger ones irrorated above with white scales, and supplemented by a row of four submarginal red spots, extending to the outer angle.

The collar above is obscurely marked with two fulvous spots, and the head with four white ones; the underside of the thorax is also marked with fulvous-red spots on each side.

In the males of *P. Anchisiades*, the fore-wings are more falcate at the tip, and the few pale scales (when present) are placed near the posterior angle of the forewings; in the hind-wings, the red patch is larger and oval, the portion between the first and second branches of the median vein being entire, and the two external portions bipartite.

In the females of *P. Anchisiades*, the pale patch in the fore-wings is larger, more oval in shape, and does not extend between the postmedian vein and the inner margin of the wing.

P. Evander, Godt. (Idæus, Fab.) has the pale apical half of the fore-wings, suddenly separated from the dark base and the red spots of the hind-wings, both in the males and females, as strongly marked as in P. Anchisiades; the fore-wings in the female being destitute of the pale discoidal spot.

Papilionidæ.

In *P. Orchamus*, the fore-wings are much shorter, and broadly triangular, with an oblique abbreviated fascia extending across and below the extremity of the discoidal cell, and the red patch of the hind-wing is of larger size and ovate, extending into the extremity of the discoidal cell, the outer and inner portion being marked by a black spot.

P. Polybius and P. Caudius have elongated narrow tails.

Papilio (Euryades) Reevii, nov sp.

P. alis supra obscure fulvis, subtus pallidioribus et magis stramineis; anticis macula subapicali flavescenti, margine nigro, maculis marginalibus flavidis; posticis dimidio postico supra fusco, subtus nigro, serie duplici macularum, rubrarum alterâque macularum majorium, supra lutearum, subtus straminearum, interpositâ; margine sinuato, incisuris albis, et 1-caudato.

Expans. alar. antic. unc. $3\frac{1}{2}$.

Hab.—Buenos Ayres (J. W. Reeve). Mus. Druce.

The only specimen of this very interesting butterfly which I have seen, is contained in the rich collection of Mr. Druce, who has kindly allowed me to describe it, and who has suggested the specific name adopted above, in honour of the captor of the insect.*

In proposing for it, however, a distinct specific name, in the uncertainty which (as a unique specimen) rests upon its sexual relationship, I must suggest the possibility of its being the opposite sex of *Papilio Duponchelii* of Lucas (Ann. Soc. Ent. France, tom. 8, pl. viii, p. 91), an insect which its describer considered to be most nearly allied to *P. Grayi* and *Scamander*, from Entre Rios, between Parana and Uruguay, of the sex of the typical specimen of which there appears to me also to be some doubt. This is a black-winged butterfly, having a broken macular yellow fascia on the fore-wings, extending into a large discoidal yellow spot on the hind-wings, followed by two rows of small round scarlet spots, yellow marginal incisures, and a single tail. Of this insect M. Lucas expressly says "Fœminam tantum novi." Dr.

^{*} Figures of Mr. Druce's specimen will appear in my forthcoming 'Thesaurus Entomologicus.' Pl. XXXIII. fig. 1, 2.

Felder (Sp. Lep., pp. 39, 88) has placed *P. Duponchelii* in the genus *Euryades*, adding, as a second species, the *Papilio Corethrus*, of Lacordaire and Boisduval (Sp. Gen. Lepid. I. p. 314, pl. 17, 1c, fig. 2; Lucas, in Chenu's Encycl. d'Hist. Nat. Lep. t. 9. f. 1), and remarking on its close relationship to the genus *Eurycus*.

Now, the females of P. Corethrus, as stated by the late Edward Doubleday (Gen. D. L. p. 21), from information which I communicated to him, have a large horny pouch on the underside of the extremity of the body, as in the genera Eurycus and Parnassius, but of this structure no mention is made by M. Lucas in his description of the supposed female P. Duponchelii. The wings in P. Corethrus are, also, not so densely clothed with scales as in the ordinary species of Papilio; they are quite alike in colour and marking in both sexes, the male external organs resembling those of Eurycus.

The remarkable diversity in the sexes of *Eurycus*, the male being black and white, with a row of blood-red spots on the hind-wings, whilst the female is semi-transparent, dull buff varied with brown, suggests to my mind the possibility that the black, yellow, and red butterfly, figured by M. Lucas under the name of *P. Duponchelii*, may be a male, the true female of which will probably prove to be a pale coloured, semi-transparent butterfly, analogous to that of *Eurycus*; in which case, it seems to me to be not improbable, that *P. Reevii* may prove to be its female. In the meantime, until I have an opportunity of examining the structure of *P. Duponchelii*, it will be desirable to consider *P. Reevii* as a distinct species.*

Papilio Thersander.

Under this name, a species of swallow-tailed butterflies was described by Fabricius, in his 'Ent. Syst.,' vol. 3, pt. 1, p. 32, with the reference to Jones, fig. pict. vol. i. tab. 71, and to the collection of Drury, as a native of Sierra Leone. This insect is now regarded as the female of the well-known *P. Doreus*, Fabr. Syst. Ent. p. 457, and Ent. Syst. vol. 3, pt. i. p. 68 (*Phoreus*, Cram. pl. 2, figs. B, C).

^{*} Since the above observations were written, it has been announced that M. Guenée has communicated a memoir on *P. Duponchelii* to the Academy of Lyons, to the publication of which we look forward with great interest.

Papilionidæ.

About the year 1840,* the famous collection of drawings made by Mr. Jones, was deposited for a short time at the British Museum, where I had the opportunity of studying the species of Papilionidæ which it contained, and of which I made considerable use in my 'Arcana Entomologica,' 1841-1845. The figures in these drawings of P. Thersander were very accurate ones, representing a moderate-sized true Papilio, from Drury's collection, marked as a native of Sierra Leone, with brown wings, having, on the upper side, a cream-coloured fascia extending across them, being macular on the fore-wings, and placed beyond the discoidal cell, but entire in the hind-wings, and not extending beyond the discoidal cell ; between the fascia and the apical margin of the forewings is a small subapical spot, and a lower row of four small submarginal spots, each divided by the longitudinal fold between the branches of the veins, the four middle incisures of the fore-wings are cream-coloured, and the one next the anal angle is larger and triangular; the hindwings have a submarginal row of cream-coloured spots, mostly divided by the folds between the longitudinal veins; the incisures are of the same colour, and the spatulated tail is marked on each edge with a similar coloured marginal spot.

The examination which I was thus enabled to make, enabled me to determine that a specimen of a *Papilio*, at that time unnamed in the collection of the Bristol Institution, forwarded to me by the care of the late W. Raddon, Esq., and one in the British Museum, were identical with a Fabrician and Jonesian butterfly, and I accordingly figured both sides of the former specimen in my 'Arcana Entomologica,' vol. I. p. 148, pl. xxxviii. figs. 1, 2, under the name of *P. Thersander*, with a statement of the means by which I had arrived at the identification of the species, and with the following additional observations:—" This is the more necessary to be stated because Donovan, in .his 'Naturalist's Repository,' vol.

^{*} At the present time (1871), the seven large quarto volumes, into which this collection of drawings is bound, belong to the family of F. Dawtrey Drewitt, Esq., of Christ Church, Oxford, and Burnham, Arundel, a gentleman of great artistic promise, who proposes to publish the unfigured and doubtful species represented therein, and who has allowed me to make a very careful collation of the entire collection.

III. pl. lxxv., figured the upper and under side of a totally different insect, under the name of *P. Thersander*, and which he says were copied from Jones's figures. If not artificial, they, however, represent one of the Nymphalide (Charaxes sp.), as is evident from the head and antennæ. There are, however, no such figures in Jones's 'Icones.' so that Donovan must have fallen into some strange error respecting the species."

Now, Donovan's figures represent a butterfly brown on the upper side, with a macular yellow fascia on the forewings, extending nearly to the tip of the wings, preceded by a yellow spot in the discoidal cell, and another in the costal margin, near the middle of the wing, and followed by a submarginal line of yellow linear transverse marks, and rather large yellow incisures; the hindwing traversed by an entire yellow band with irregular margins, followed by a double row of submarginal spots, large yellow incisures, and a single spatulate tail with yellow edges; the underside is of a lilac colour, the basal half with dark undulating transverse lines (intended to represent the longitudinally "nigro lineatæ" of the Fabrician description of the hind-wings), an entire yellow central fascia extending across all the wings obliquely, followed by two irregular series of lunules, of which the outer consists of seven white ones corresponding with the "denique lunulæ septem albæ" of the Fabrician description. With these figures, so completely at variance with those of Mr. Jones's 'Icones,' Donovan published the following observations :--- "The experienced entomologist, conversant with the labours of Fabricius, will be best enabled to appreciate the importance of the plate which we now submit to his attention; he will be aware of the existence of this fine species of the Papilio tribe from the description which Fabricius has left us; and he will also know that it is only from that description, with the additional aid of Mr. Jones's drawings, that this interesting and conspicuous species can be at this time possibly ascertained, for there are no descriptions of the species extant, except those repeated from the writings of Fabricius, nor any figure excepting that in the collectanea of Mr. Jones's drawings, to which Fabricius exclusively refers. After having advanced the preceding observations, it will be assuredly sufficient for us, in order to ensure the attention of the entomologist, to

observe that, although we possess a very choice example of this elegant insect in our own cabinet, the figures in the annexed plate are faithful copies of the individual drawings in the collection of Mr. Jones, to which Fabricius has referred; and we conceive we render some advantage at least to science, in thus enabling the naturalist to identify this fine and very interesting species in the classical work of that estimable entomologist, who has alone described it."

The attempt to unravel the real history of these figures is worthy our attention, by letting us into the secret of Donovan's mode of preparing such of the plates of his illustrated works as represent those Fabrician butterflies which had been described only from Jones's 'Icones.' Mr. Jones lived at Chelsea, and Donovan, as an excellent artist, engaged in publishing various illustrated works on the science, was allowed unlimited use of these drawings; and his general plan was to copy, in strong body watercolours, the upper-surface of the two wings on one side of the species, adding marginal notes of the differences exhibited by the under-surface of the same wings; and it is from these notes, and not from direct copies of Jones's drawings, that many of the undersides of Donovan's figures were published. Donovan's set of copies, thus made, were subsequently purchased by the Rev. F. W. Hope, who added them to his entomological library, presented, as is well known, with his collections, to the University of Oxford, and now under my charge. From these it is evident that Donovan was a careless person, his drawings having been kept in a very dirty condition.

Now it happens that Donovan's copy of the figure of the upper-surface of *P. Thersander* had been grievously mutilated (it appears as though it, as well as some other of his copies, had been gnawed by mice), half of the costal portion and part of the apical portion of the forewings, and half the base, including the pale fascia, and the whole of the anal margin of the hind-wings have disappeared. The fragments were put together by Donovan, and mounted on a sheet of thick whitey-brown paper, on which Mr. Hope wrote, "put together by Donovan to settle some dispute." Moreover, a portion of the end of each line of the note of description of the underside has been lost, and, consequently, did not afford Donovan sufficient material to manufacture a figure of the underside. To do this, he had recourse to collections, and finding in one of the varieties of Nymphalis (Charaxes) Fabius (var. Hannibal), a dark brown butterfly with a macular pale fascia on the fore-wings, and an entire one on the hind-wings, he (regardless of the variation in the arrangement of the fore-wing veins and peculiar shaped tail to the hind-wing, still visible in his tattered fragments), compounded a figure of the upper surface, in which he introduced a spot within the discoidal cell, and another in the middle of the costa of the fore-wings, of which there are no traces given in his own fragments, and converted the two short acute tails of the Charaxes into the spatulate one of P. Thersander, adding a red lunule on a yellow ground at the anal angle, whilst, as his notes of the under-surface of P. Thersander had been partially destroyed, he was obliged to depend entirely on his specimen of the Charaxes, which does not bear the slightest resemblance to that of P. Thersander.

By way of confirming the above statements, and of shewing the manner in which some of Donovan's figures were manufactured, I add the following notes on two other species of butterflies.

EUPLIEA SYLVESTER.

In the 'Naturalist's Repository,' vol. iv. p. 120, is published a tolerably correct copy of the upperside of this species, from Jones (omitting the white dots on the head and thorax, and making the middle spot on the costa of the fore-wings transverse instead of oblique) whilst the underside is represented uniformly brown, with the exception of three small white dots beyond the middle of the forewings, and a submarginal series of ten minute white spots in the fore, and of fourteen similar close to the outer margin of the hind-wings. Jones's figure, however, of the underside, represents the hind-wing as marked with the same broad white macular band as the upperside, preceded by one small white spot within the discoidal cell, followed by a curved row of seven small spots, close to the inner edge of the white fascia, which is followed by a submarginal row of twelve small dots, of which there are only six in the fore-wings. On referring to Donovan's copies from Jones, we find the upper surface alone represented, but on the brown ground of the wings are to be seen several small black dots, with the marginal note:

Papilionidæ.

"These black dots are not seen, but only denote"... (here torn, but meaning the white dots which Donovan introduced into his published figure, and which he evidently supposed in 1825, when he published his plate, were the only markings in the under-surface of the wings.

Again, in the 'Mantissa Insectorum,' and Ent. Syst. iii. p. 260, Fabricius described—

THECLA TIMON,

with the "Habitat in America, meridionali, Mus. Dr. Hunter." The description, which is identical in the two works, is very clear; "alis-subtus albis; posticis fascia abbreviata sanguinea."-In Jones's 'Icones,' vol. v. pl. i. fig. 2, 2a, a large species of Thecla was represented as P. Timon, with a reference to the collection of "Drury," from "Amer. meridion." It happens, however, that we are able to state, that this species figured by Jones was not recognized by Fabricius, as having been described by himself; for at the commencement of this fifth volume of Jones's ' Icones,' is a manuscript of such of the species as had been described by Fabricius in his own handwriting, as we learn by Mr. Jones's note, "This is Mr. Fabricius's own writing, the names given and corrected by himself;" and in this list neither of the species represented in pl. I. are referred to. Donovan, however, with his usual boldness, affirms of the figures which he published in the 'Naturalist's Repository,' vol. III. pl. xcvii., copied from Jones's figures :---

"Papilio Timon is another of those choice examples of the Papilio tribe, for the description of which we are indebted solely to Fabricius, and for the illustration of the species in the inestimable drawings of Mr. Jones. The species is a native of South America, and was originally preserved in the cabinet of Mr. Drury; subsequently this rarity came into our own possession. Fabricius refers for the specimen he describes, to the cabinet of Dr. Hunter, in which there may perhaps be other examples of the same insect; but we are well assured from the Fabrician MS., that the description of the species which he has left us, was taken from the drawings in the collection of Mr. Jones, and that this drawing was copied from the specimen in the cabinet of Mr. Drury, to which we have adverted." It will be seen from the preceding observations that, whilst the last statement is quite correct, the preceding one is false, the description having been made from a specimen in the Hunterian collection, which disagrees with that figured by Jones and copied by Donovan, in having a reddish stripe running across all the wings on the underside. The real type of *Th. Timon* is still preserved in the Hunterian Museum at Glasgow, and Mr. Butler has been enabled to give a detailed description of it (Cat. Fabr. Diurn. Lep., p. 183).

Explanation of the Plates.

PLATE III.

Fig. 1. Papilio Buddha, p. 86.

- 2. Papilio Papone, p. 94.
- 3. Papilio Odenatus, underside, p. 96.
- 4. ", ", upperside.
- 5. Papilio Burchellanus, p. 101.

PLATE IV.

Fig. 1. Papilio Nox, male.

- 2. Papilio Noctis, male.
- 3. Papilio Noctula, male, p. 90.
- 4. Papilio Strix, female underside, p. 92.
- 5. Papilio Noctis, female underside.

PLATE V.

- Fig. 1. Papilio Parsedon, upperside, p. 59.
 - 2. " " underside.
 - 3. Papilio Ramaceus, p. 95.
 - 4. Papilio Chiansiades, upperside, p. 101.
 - 5. " " underside.

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